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<151> 2002-09-13

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 Thr Val Asn Ile Tyr Lys Leu Gln Ala Asp Ser Tyr Lys Ser Glu Ile
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<213> Streptococcus agalactiae

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<213> Streptococcus agalactiae

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<212> DNA

<213> Streptococcus agalactiae

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<211> 1233

<212> PRT

<213> Streptococcus agalactiae

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Gln	Gln	Pro	Ser	Pro	Ser	Val	Thr	Thr	Asn	Thr	Val	Glu	Lys	Thr	Ser

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Lys Asn Leu Asp Thr Ser	Asn Leu Gly Ala Asp	Leu Glu Glu Glu Tyr
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Pro Ser Lys Pro Glu Thr	Thr Asn Asn Lys Glu	Ser Asn Val Val Thr
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Ser Pro Ala Ile Ser Glu	Asp Thr Leu Ser Val	Ala Ser Tyr Glu Ser
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465	470	475
Ile Val Ile Phe Asn Asp	Gln Glu Lys Arg Gly	Asn Phe Leu Ile Pro
485	490	495

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Glu	Ile	Tyr	Ser	Ser	Thr	Tyr	Asn	Asn	Gln	Tyr	Gln	Thr	Met	Ser	Gly	565	570	575
Thr	Ser	Met	Ala	Ser	Pro	His	Val	Ala	Gly	Leu	Met	Thr	Met	Leu	Gln	580	585	590
Ser	His	Leu	Ala	Glu	Lys	Tyr	Lys	Gly	Met	Asn	Leu	Asp	Ser	Lys	Lys	595	600	605
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Tyr	Ser	Glu	Glu	Asp	Lys	Ala	Phe	Tyr	Ser	Pro	Arg	Gln	Gln	Gly	Ala	625	630	635
Gly	Val	Val	Asp	Ala	Glu	Lys	Ala	Ile	Gln	Ala	Gln	Tyr	Tyr	Ile	Thr	645	650	655
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Phe	Ala	Leu	Lys	Pro	Gln	Ala	Leu	Leu	Asp	Thr	Asn	Trp	Gln	Lys	Val	705	710	715
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Lys	Val	Glu	Asp	Lys	Thr	Ile	His	Leu	Leu	Glu	Arg	Asp	Ala	Ala	Asn	865	870	875
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Ser Asp Arg Ala Thr Asn Gly Leu Phe Val Gly Thr Leu Ala Leu Leu		1200
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<211> 2040

<212> DNA

<213> Streptococcus agalactiae

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<210> 10

<211> 680

<212> PRT

<213> Streptococcus agalactiae

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Pro His His Ile Ser Ala Pro Asp Ala Leu Lys Thr Thr Gln Ser Ser
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Pro Val Val Glu Ser Thr Ser Thr Lys Leu Thr Glu Glu Thr Tyr Lys
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14

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ccaaatgaag atggtacctt tactcttctt gaagaggctg aaacaatgga aggcgctact 3000
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gatcaagcac cagacaagaa accagaagct aaaccagaac aagacggttc aggtcaaaca 3180
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actcctcaaa aaggtcaatc ttctcgtagt ctagagaaac gatcttctaa gcgtgcttta 3300
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<210> 12

<211> 1134

<212> PRT

<213> Streptococcus agalactiae

<400> 12

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Thr Val Thr Glu Asp Thr Pro Ala Thr Glu Gln Ala Val Glu Pro Pro
35     40     45
Gln Pro Ile Ala Val Ser Glu Glu Ser Arg Ser Ser Lys Glu Thr Lys
50     55     60
Thr Ser Gln Thr Pro Ser Asp Val Gly Glu Thr Val Ala Asp Asp Ala
65     70     75     80
Asn Asp Leu Ala Pro Gln Ala Pro Ala Lys Thr Ala Asp Thr Pro Ala
85     90     95
Thr Ser Lys Ala Thr Ile Arg Asp Leu Asn Asp Pro Ser His Val Lys
100    105    110
Thr Leu Gln Glu Lys Ala Gly Lys Gly Ala Gly Thr Val Val Ala Val
115    120    125
Ile Asp Ala Gly Phe Asp Lys Asn His Glu Ala Trp Arg Leu Thr Asp
130    135    140
Lys Thr Lys Ala Arg Tyr Gln Ser Lys Glu Asn Leu Glu Lys Ala Lys
145    150    155    160
Lys Glu His Gly Ile Thr Tyr Gly Glu Trp Val Asn Asp Lys Val Ala
165    170    175
Tyr Tyr His Asp Tyr Ser Lys Asp Gly Lys Asn Ala Val Asp Gln Glu
180    185    190
His Gly Thr His Val Ser Gly Ile Leu Ser Gly Asn Ala Pro Ser Glu
195    200    205
Met Lys Glu Pro Tyr Arg Leu Glu Gly Ala Met Pro Glu Ala Gln Leu
210    215    220
Leu Leu Met Arg Val Glu Ile Val Asn Gly Leu Ala Asp Tyr Ala Arg
225    230    235    240
Asn Tyr Ala Gln Ala Ile Arg Asp Ala Val Asn Leu Gly Ala Lys Val

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				245				250				255			
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Ile	Val	Thr	Ser	Ala	Gly	Asn	Asp	Ser	Ser	Phe	Gly	Gly	Lys	Pro	Arg
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Leu	Pro	Leu	Ala	Asp	His	Pro	Asp	Tyr	Gly	Val	Val	Gly	Thr	Pro	Ala
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Ala	Ala	Asp	Ser	Thr	Leu	Thr	Val	Ala	Ser	Tyr	Ser	Pro	Asp	Lys	Glu
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Asn	Pro	Pro	Lys	Thr	Ile	Thr	Phe	Asn	Ala	Thr	Pro	Lys	Val	Leu	Pro
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Tyr	Glu	Thr	Gln	Tyr	Pro	Asp	Met	Thr	Pro	Ser	Glu	Arg	Leu	Asp	Leu
			530			535						540			
Ala	Lys	Lys	Val	Leu	Met	Ser	Ser	Ala	Thr	Ala	Leu	Tyr	Asp	Glu	Asp
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Thr	Ser	Ser	Lys	Val	His	Leu	Asn	Asn	Val	Ser	Asp	Lys	Phe	Glu	Val
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Thr	Val	Thr	Val	His	Asn	Lys	Ser	Asp	Lys	Pro	Gln	Glu	Leu	Tyr	Tyr
			610			615						620			
Gln	Val	Thr	Val	Gln	Thr	Asp	Lys	Val	Asp	Gly	Lys	His	Phe	Ala	Leu
625				630						635			640		
Ala	Pro	Lys	Ala	Leu	Tyr	Glu	Thr	Ser	Trp	Gln	Lys	Ile	Thr	Ile	Pro
			645			650						655			
Ala	Asn	Ser	Ser	Lys	Gln	Val	Thr	Val	Pro	Ile	Asp	Ala	Ser	Arg	

Phe	Val	Arg	Phe	Lys	Gln	Asp	Pro	Thr	Lys	Glu	Glu	Leu	Met	Ser	Ile	690	695	700
Pro	Tyr	Ile	Gly	Phe	Arg	Gly	Asp	Phe	Gly	Asn	Leu	Ser	Ala	Leu	Glu	705	710	715
Lys	Pro	Ile	Tyr	Asp	Ser	Lys	Asp	Gly	Ser	Ser	Tyr	Tyr	His	Glu	Ala	725	730	735
Asn	Ser	Asp	Ala	Lys	Asp	Gln	Leu	Asp	Gly	Asp	Gly	Leu	Gln	Phe	Tyr	740	745	750
Ala	Leu	Lys	Asn	Asn	Phe	Thr	Ala	Leu	Thr	Thr	Glu	Ser	Asn	Pro	Trp	755	760	765
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Glu	Ser	Ser	Glu	Ile	Thr	Glu	Thr	Ile	Phe	Ala	Gly	Thr	Phe	Ala	Lys	785	790	795
Gln	Asp	Asp	Asp	Ser	His	Tyr	Tyr	Ile	His	Arg	His	Ala	Asn	Gly	Lys	805	810	815
Pro	Tyr	Ala	Ala	Ile	Ser	Pro	Asn	Gly	Asp	Gly	Asn	Arg	Asp	Tyr	Val	820	825	830
Gln	Phe	Gln	Gly	Thr	Phe	Leu	Arg	Asn	Ala	Lys	Asn	Leu	Val	Ala	Glu	835	840	845
Val	Leu	Asp	Lys	Glu	Gly	Asn	Val	Val	Trp	Thr	Ser	Glu	Val	Thr	Glu	850	855	860
Gln	Val	Val	Lys	Asn	Tyr	Asn	Asn	Asp	Leu	Ala	Ser	Thr	Leu	Gly	Ser	865	870	875
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Ser	Ser	Gly	Ala	Lys	Glu	Gln	His	Thr	Asp	Phe	Asp	Val	Ile	Val	Asp	915	920	925
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Ser	Arg	Leu	Thr	Leu	Ala	Ser	Lys	Pro	Lys	Thr	Ser	Gln	Pro	Val	Tyr	945	950	955
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Glu	Tyr	Ile	Ser	Pro	Asn	Glu	Asp	Gly	Thr	Phe	Thr	Leu	Pro	Glu	Glu	980	985	990
Ala	Glu	Thr	Met	Glu	Gly	Ala	Thr	Val	Pro	Leu	Lys	Met	Ser	Asp	Phe	995	1000	1005
Thr	Tyr	Val	Val	Glu	Asp	Met	Ala	Gly	Asn	Ile	Thr	Tyr	Thr	Pro	Val	1010	1015	1020
Thr	Lys	Leu	Leu	Glu	Gly	His	Ser	Asn	Lys	Pro	Glu	Gln	Asp	Gly	Ser	1025	1030	1035
Asp	Gln	Ala	Pro	Asp	Lys	Lys	Pro	Glu	Ala	Lys	Pro	Glu	Gln	Asp	Gly	1045	1050	1055
Ser	Gly	Gln	Thr	Pro	Asp	Lys	Lys	Lys	Glu	Thr	Lys	Pro	Glu	Lys	Asp	1060	1065	1070
Ser	Ser	Gly	Gln	Thr	Pro	Gly	Lys	Thr	Pro	Gln	Lys	Gly	Gln	Ser	Ser	1075	1080	1085
Arg	Thr	Leu	Glu	Lys	Arg	Ser	Ser	Lys	Arg	Ala	Leu	Ala	Thr	Lys	Ala	1090	1095	1100
Ser	Thr	Arg	Asp	Gln	Leu	Pro	Thr	Thr	Asn	Asp	Lys	Asp	Thr	Asn	Arg	1105	1110	1115
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1125

1130

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 <212> DNA
 <213> Streptococcus agalactiae

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 gttaatgatg gcaaaccatt tgatgaaaat ccaacagcac agtctttggt ggaagagggt 180
 attaaagtgg tttgtggtag tcatccttta gaattggttag atgaggattt ttgttacatg 240
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 atccctgttt tgactgaagt ggaattagca tacttagttt cagaatctca gctaataagg 360
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 ggaggtcaga gaggtttggt agctgggaat atcggctttc ctgctagtga agttgttcag 480
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 catgggtctt ttgaagatta tgttgctgca aaatggaata tccaaaatca aatgtcttca 660
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 <213> Streptococcus agalactiae

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 35 40 45
 Glu Asn Pro Thr Ala Gln Ser Leu Leu Glu Glu Gly Ile Lys Val Val
 50 55 60
 Cys Gly Ser His Pro Leu Glu Leu Leu Asp Glu Asp Phe Cys Tyr Met
 65 70 75 80
 Ile Lys Asn Pro Gly Ile Pro Tyr Asn Asn Pro Met Val Lys Lys Ala
 85 90 95
 Leu Glu Lys Gln Ile Pro Val Leu Thr Glu Val Glu Leu Ala Tyr Leu
 100 105 110
 Val Ser Glu Ser Gln Leu Ile Gly Ile Thr Gly Ser Asn Gly Lys Thr
 115 120 125
 Thr Thr Thr Thr Met Ile Ala Glu Val Leu Asn Ala Gly Gly Gln Arg

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Ala Ala Asn Asp Lys Asp Thr Leu Val Met Glu Leu Ser Ser Phe Gln		
165	170	175
Leu Met Gly Val Lys Glu Phe Arg Pro His Ile Ala Val Ile Thr Asn		
180	185	190
Leu Met Pro Thr His Leu Asp Tyr His Gly Ser Phe Glu Asp Tyr Val		
195	200	205
Ala Ala Lys Trp Asn Ile Gln Asn Gln Met Ser Ser Asp Phe Leu		
210	215	220
Val Leu Asn Phe Asn Gln Gly Ile Ser Lys Glu Leu Ala Lys Thr Thr		
225	230	235
Lys Ala Thr Ile Val Pro Phe Ser Thr Thr Glu Lys Val Asp Gly Ala		
245	250	255
Tyr Val Gln Asp Lys Gln Leu Phe Tyr Lys Gly Glu Asn Ile Met Ser		
260	265	270
Val Asp Asp Ile Gly Val Pro Gly Ser His Asn Val Glu Asn Ala Leu		
275	280	285
Ala Thr Ile Ala Val Ala Lys Leu Ala Gly Ile Ser Asn Gln Val Ile		
290	295	300
Arg Glu Thr Leu Ser Asn Phe Gly Gly Val Lys His Arg Leu Gln Ser		
305	310	315
Leu Gly Lys Val His Gly Ile Ser Phe Tyr Asn Asp Ser Lys Ser Thr		
325	330	335
Asn Ile Leu Ala Thr Gln Lys Ala Leu Ser Gly Phe Asp Asn Thr Lys		
340	345	350
Val Ile Leu Ile Ala Gly Gly Leu Asp Arg Gly Asn Glu Phe Asp Glu		
355	360	365
Leu Ile Pro Asp Ile Thr Gly Leu Lys His Met Val Val Leu Gly Glu		
370	375	380
Ser Ala Ser Arg Val Lys Arg Ala Ala Gln Lys Ala Gly Val Thr Tyr		
385	390	395
Ser Asp Ala Leu Asp Val Arg Asp Ala Val His Lys Ala Tyr Glu Val		
405	410	415
Ala Gln Gln Gly Asp Val Ile Leu Leu Ser Pro Ala Asn Ala Ser Trp		
420	425	430
Asp Met Tyr Lys Asn Phe Glu Val Arg Gly Asp Glu Phe Ile Asp Thr		
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Phe Glu Ser Leu Arg Gly Glu		
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<211> 1020

<212> DNA

<213> Streptococcus agalactiae

<400> 15

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tactatggta tgggtgacagg ggatattttc cctttggatg ctaattctgt tggggatact	180
atcaaccgtg gaggaacggt tttacgttca gcacgttata ctgaatttgc tgaacttgaa	240
ggtcagctta aagggattga acagcttaaa aaacacggta ttgaagggtg agtagttatc	300
gggtggtgatg gttcttatca tgggtgctatg cgtctaactg agcacgggtt cccagctggt	360
ggtttgccgg gtacaattga taacgatata gttggcactg actatactat tgggttttgac	420

acagcagttg	cgacagcagt	tgagaatctt	gaccgtcttc	gtgatacatc	agcaagtcac	480
aaccgtactt	ttgttggtga	ggttatggga	agaaatgcag	gagatatcgc	tctttgggtca	540
ggatcgcgtg	caggtgcaga	tcaaattatt	gttcctgaag	aagagttcaa	tattgatgaa	600
gttgtctcaa	atgtagagc	tggctatgca	gctggtaaac	atcaccaa	catcgctcctt	660
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agcgatcttc	gtgtgacgaa	tttaggacat	ctgctccgtg	gtggtagtcc	gacggctcgt	780
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ggtggtttag	ccgttggtgt	ccacaacgaa	gaaatgggtg	aaagtccaat	tttaggttta	900
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<210> 16

<211> 340

<212> PRT

<213> Streptococcus agalactiae

<400> 16

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Asn	Ala	Ala	Ile	Arg	Ala	Val	Val	Arg	Lys	Ala	Ile	Ser	Glu	Gly	Met
			20					25					30		
Glu	Val	Tyr	Gly	Ile	Asn	Gln	Gly	Tyr	Tyr	Gly	Met	Val	Thr	Gly	Asp
		35					40					45			
Ile	Phe	Pro	Leu	Asp	Ala	Asn	Ser	Val	Gly	Asp	Thr	Ile	Asn	Arg	Gly
	50					55					60				
Gly	Thr	Phe	Leu	Arg	Ser	Ala	Arg	Tyr	Pro	Glu	Phe	Ala	Glu	Leu	Glu
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Gly	Gln	Leu	Lys	Gly	Ile	Glu	Gln	Leu	Lys	Lys	His	Gly	Ile	Glu	Gly
			85						90					95	
Val	Val	Val	Ile	Gly	Gly	Asp	Gly	Ser	Tyr	His	Gly	Ala	Met	Arg	Leu
			100					105						110	
Thr	Glu	His	Gly	Phe	Pro	Ala	Val	Gly	Leu	Pro	Gly	Thr	Ile	Asp	Asn
		115					120					125			
Asp	Ile	Val	Gly	Thr	Asp	Tyr	Thr	Ile	Gly	Phe	Asp	Thr	Ala	Val	Ala
	130					135					140				
Thr	Ala	Val	Glu	Asn	Leu	Asp	Arg	Leu	Arg	Asp	Thr	Ser	Ala	Ser	His
145				150						155				160	
Asn	Arg	Thr	Phe	Val	Val	Glu	Val	Met	Gly	Arg	Asn	Ala	Gly	Asp	Ile
			165						170					175	
Ala	Leu	Trp	Ser	Gly	Ile	Ala	Ala	Gly	Ala	Asp	Gln	Ile	Ile	Val	Pro
		180						185						190	
Glu	Glu	Glu	Phe	Asn	Ile	Asp	Glu	Val	Val	Ser	Asn	Val	Arg	Ala	Gly
	195					200						205			
Tyr	Ala	Ala	Gly	Lys	His	His	Gln	Ile	Ile	Val	Leu	Ala	Glu	Gly	Val
	210					215					220				
Met	Ser	Gly	Asp	Glu	Phe	Ala	Lys	Thr	Met	Lys	Ala	Ala	Gly	Asp	Asp
225				230						235				240	
Ser	Asp	Leu	Arg	Val	Thr	Asn	Leu	Gly	His	Leu	Leu	Arg	Gly	Gly	Ser
			245						250					255	
Pro	Thr	Ala	Arg	Asp	Arg	Val	Leu	Ala	Ser	Arg	Met	Gly	Ala	Tyr	Ala
		260						265					270		
Val	Gln	Leu	Leu	Lys	Glu	Gly	Arg	Gly	Gly	Leu	Ala	Val	Gly	Val	His
	275						280					285			
Asn	Glu	Glu	Met	Val	Glu	Ser	Pro	Ile	Leu	Gly	Leu	Ala	Glu	Glu	Gly
	290					295					300				

Ala Leu Phe Ser Leu Thr Asp Glu Gly Lys Ile Val Val Asn Asn Pro
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 His Lys Ala Asp Leu Arg Leu Ala Ala Leu Asn Arg Asp Leu Ala Asn
 325 330 335
 Gln Ser Ser Lys
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 <211> 1376
 <212> DNA
 <213> Streptococcus agalactiae

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 gatttggtta agcaagacaa taaatcatca tatactgtga aatatggtga tacactaagc 180
 gttattttcag aagcaatgtc aattgatatg aatgtcttag caaaaataaa taacattgca 240
 gatatcaatc ttattttatcc tgagacaaca ctgacagtaa cttacgatca gaagagtcac 300
 actgccactt caatgaaaat agaaacacca gcaacaaatg ctgctggtca aacaacagct 360
 actgtggatt tgaaaaccaa tcaagtttct gttgcagacc aaaaagtttc tctcaatata 420
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 gcagctaaag aggaagttaa accaactcag acgtcagtcg gtcagtcaac aacagtatca 660
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 <212> PRT
 <213> Streptococcus agalactiae

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 20 25 30
 Arg Thr Val Ser Glu Val Lys Ala Asp Leu Val Lys Gln Asp Asn Lys
 35 40 45
 Ser Ser Tyr Thr Val Lys Tyr Gly Asp Thr Leu Ser Val Ile Ser Glu
 50 55 60
 Ala Met Ser Ile Asp Met Asn Val Leu Ala Lys Ile Asn Asn Ile Ala
 65 70 75 80
 Asp Ile Asn Leu Ile Tyr Pro Glu Thr Thr Leu Thr Val Thr Tyr Asp
 85 90 95

Gln Lys Ser His Thr Ala Thr Ser Met Lys Ile Glu Thr Pro Ala Thr
 100 105 110
 Asn Ala Ala Gly Gln Thr Thr Ala Thr Val Asp Leu Lys Thr Asn Gln
 115 120 125
 Val Ser Val Ala Asp Gln Lys Val Ser Leu Asn Thr Ile Ser Glu Gly
 130 135 140
 Met Thr Pro Glu Ala Ala Thr Thr Ile Val Ser Pro Met Lys Thr Tyr
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 Ala Val Ser Gln Ala Ala Ala Asn Glu Gln Val Ser Pro Ala Pro Val
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 Lys Ser Ile Thr Ser Glu Val Pro Ala Ala Lys Glu Glu Val Lys Pro
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 Ala Ala Glu Thr Pro Ala Pro Val Ala Lys Val Ala Pro Val Arg Thr
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 Thr Thr Thr Ser Pro Ala Thr Asp Ser Lys Leu Gln Ala Thr Glu Val
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 Lys Ser Val Pro Val Ala Gln Lys Ala Pro Thr Ala Thr Pro Val Ala
 290 295 300
 Gln Pro Ala Ser Thr Thr Asn Ala Val Ala Ala His Pro Glu Asn Ala
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 Tyr Gly Val Asn Glu Phe Ser Thr Tyr Arg Ala Gly Asp Pro Gly Asp
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 His Gly Lys Gly Leu Ala Val Asp Phe Ile Val Gly Thr Asn Gln Ala
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 Leu Gly Asn Lys Val Ala Gln Tyr Ser Thr Gln Asn Met Ala Ala Asn
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 Asn Ile Ser Tyr Val Ile Trp Gln Gln Lys Phe Tyr Ser Asn Thr Asn
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<211> 2070

<212> DNA

<213> Streptococcus agalactiae

<400> 19

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aaccctaattg gtgaaagcat tagggttcaa gcaggcgata tgggttgagc aagtccagcc	300
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 Gln Leu Asp Ala Tyr Met Asp Asp Ala Gln Lys Asp Phe Lys Gln Thr
 65 70 75 80
 Asn Pro Asn Gly Glu Ser Ile Arg Val Gln Ala Gly Asp Met Val Gly
 85 90 95
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His	Asn	His	Gln	Tyr	Thr	Asn	Gly	Leu	Val	Gly	Lys	Thr	Arg	Ile	Val
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Gly	Ala	Ala	Gln	Ala	Val	Gln	Pro	Phe	Gly	Asn	Ile	Leu	Gln	Val	Val
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Val	Pro	Asn	Asn	Lys	Pro	Lys	Ile	Tyr	Val	Thr	Met	Lys	Met	Val	Asn
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Tyr Leu Asp Arg Gln Gly Asn Ile Val Ala Gln Glu Ile Val Ser Asp
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 Thr Leu Asn Gln Thr Lys Ser Lys Ser Thr Lys Ile Asn Pro Val Thr
 610 615 620
 Thr Ile His Lys Lys Gln Leu His Gln Phe Thr Ala Ile Asn Pro Met
 625 630 635 640
 Arg Asn Tyr Gly Lys Pro Ser Asn Ser Thr Thr Val Lys Ser Lys Gln
 645 650 655
 Leu Pro Lys Thr Asn Ser Glu Tyr Gly Gln Ser Phe Leu Met Ser Val
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 <212> DNA
 <213> Streptococcus agalactiae

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 <212> PRT
 <213> Streptococcus agalactiae

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 <222> (1) ... (500)

<223> Xaa = Any Amino Acid

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Phe	Ala	Lys	Asp	Lys	Asp	Thr	Arg	Glu	Phe	Glu	Val	Val	Val	Glu	Asn
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210						215					220				
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	275						280					285			
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Ser	Glu	Val	Ser	Asp	Val	Phe	Asn	Ala	Val	Ile	Asp	Gly	Thr	Asp	Ala
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Thr	Met	Leu	Ser	Gly	Glu	Ser	Ala	Asn	Gly	Lys	Tyr	Pro	Val	Glu	Ser
		340						345					350		
Val	Arg	Thr	Met	Ala	Thr	Ile	Asp	Lys	Asn	Ala	Gln	Thr	Leu	Leu	Asn
	355						360					365			
Glu	Tyr	Gly	Arg	Leu	Asp	Ser	Ser	Ala	Phe	Pro	Arg	Asn	Asn	Lys	Thr
	370					375					380				
Asp	Val	Ile	Ala	Ser	Ala	Val	Lys	Asp	Ala	Thr	His	Ser	Met	Asp	Ile
385					390					395					400
Lys	Leu	Val	Val	Thr	Ile	Thr	Glu	Thr	Gly	Asn	Thr	Ala	Arg	Ala	Ile
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Ser Lys Phe Arg Pro Asp Ala Asp Ile Leu Ala Val Thr Phe Asp Glu
420 425 430
Lys Val Gln Arg Ser Leu Met Ile Asn Trp Gly Val Ile Pro Val Leu
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Ala Asp Lys Pro Ala Ser Thr Asp Asp Met Phe Glu Val Ala Glu Arg
450 455 460
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Arg Thr Val Lys
500

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<213> Streptococcus agalactiae

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<210> 24
<211> 240
<212> PRT
<213> Streptococcus agalactiae

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35 40 45
Gly Glu Glu Leu Ile Ser Pro Phe Thr Ile Thr Ala Gly Asp Glu Phe
50 55 60
Gln Ala Leu Leu Lys Pro Ser Lys Lys Val Phe Gln Ile Ile Asp His
65 70 75 80
Ile Gln Leu Ala Leu Lys Pro Val Asn Val Arg Phe Gly Leu Gly Thr
85 90 95
Gly Asn Ile Ile Thr Ser Ile Asn Ser Asn Glu Ser Ile Gly Ala Asp
100 105 110
Gly Pro Ala Tyr Trp His Ala Arg Ser Ala Ile Asn His Ile His Asp
115 120 125
Lys Asn Asp Tyr Gly Thr Val Gln Val Ala Ile Cys Leu Asp Asp Glu

130	135	140
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145	150	155
Phe Ile Lys Ser Lys Trp Thr Thr Asn His Phe Gln Met Leu Glu His		
165	170	175
Leu Ile Leu Gln Asp Asn Tyr Gln Glu Gln Phe Gln His Gln Lys Leu		
180	185	190
Ala Gln Leu Glu Asn Ile Glu Pro Ser Ala Leu Thr Lys Arg Leu Lys		
195	200	205
Ala Ser Gly Leu Lys Ile Tyr Leu Arg Thr Arg Thr Gln Ala Ala Asp		
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Leu Leu Val Lys Ser Cys Thr Gln Thr Lys Gly Gly Ser Tyr Asp Phe		
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 <213> Streptococcus agalactiae

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 <211> 290
 <212> PRT
 <213> Streptococcus agalactiae

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Gly Arg Ser Arg Glu Glu Ile Arg Tyr Ile Met Ser Arg Asn Leu Glu
35 40 45
Val Met Lys Ala Ser Val Ile Asp Gly Leu Thr Pro Ser Lys Ser Ile
50 55 60
Ser Gly Leu Thr Gly Gly Asp Ala Val Lys Met Asp Gln Tyr Leu Gln
65 70 75 80
Ser Gly Lys Thr Ile Ser Asp Thr Thr Ile Leu Ala Ala Val Arg Asn
85 90 95
Ala Met Ala Val Asn Glu Leu Asn Ala Lys Met Gly Leu Val Cys Ala


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atttcgacaa atagtggagc gcttgatggg atacaatatg ccaaggaaat gatgcgtaac 1680
gataatctag actatgtgat tcttgtttct gctaatacagt ggacagacat gagttttatg 1740
tggtggcaac aattaaacta tgatagtcaa atgtttgtcg gttctgatta ttgttcagca 1800
caagtcctct ctctcaagc attggataat tctctataa tattaggtag taaacaatta 1860
aaatatagcc ataaaacatt cacagatgtg atgactatct ttgatgctgc gtttcaaaat 1920
ttattatcag acttaggact aaccataaaa gatatacaag gtttcgtttg gaatgagcgg 1980
aagaaggcag ttagttcaga ttatgatttc ttagcgaact tgtctgagta ttataatatg 2040
ccaaaccttg cttctgggtc gtttggattt tcataaatg gtgctggtga agaactggac 2100
tatactgtta atgaaagtat agaaaagggc tattatttag tcctatctta ttcgatcttc 2160
ggtggtatct cttttgctat tattgaaaaa agg 2193

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<210> 28

<211> 731

<212> PRT

<213> Streptococcus agalactiae

<400> 28

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Met Ser Val Tyr Val Ser Gly Ile Gly Ile Ile Ser Ser Leu Gly Lys
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Asn Tyr Ser Glu His Lys Gln His Leu Phe Asp Leu Lys Glu Gly Ile
 20          25          30
Ser Lys His Leu Tyr Lys Asn His Asp Ser Ile Leu Glu Ser Tyr Thr
 35          40          45
Gly Ser Ile Thr Ser Asp Pro Glu Val Pro Glu Gln Tyr Lys Asp Glu
 50          55          60
Thr Arg Asn Phe Lys Phe Ala Phe Thr Ala Phe Glu Glu Ala Leu Ala
 65          70          75          80
Ser Ser Gly Val Asn Leu Lys Ala Tyr His Asn Ile Ala Val Cys Leu
 85          90          95
Gly Thr Ser Leu Gly Gly Lys Ser Ala Gly Gln Asn Ala Leu Tyr Gln
100          105          110
Phe Glu Glu Gly Glu Arg Gln Val Asp Ala Ser Leu Leu Glu Lys Ala
115          120          125
Ser Val Tyr His Ile Ala Asp Glu Leu Met Ala Tyr His Asp Ile Val
130          135          140
Gly Ala Ser Tyr Val Ile Ser Thr Ala Cys Ser Ala Ser Asn Asn Ala
145          150          155          160
Val Ile Leu Gly Thr Gln Leu Leu Gln Asp Gly Asp Cys Asp Leu Ala
165          170          175
Ile Cys Gly Gly Cys Asp Glu Leu Ser Asp Ile Ser Leu Ala Gly Phe
180          185          190
Thr Ser Leu Gly Ala Ile Asn Thr Glu Met Ala Cys Gln Pro Tyr Ser
195          200          205
Ser Gly Lys Gly Ile Asn Leu Gly Glu Gly Ala Gly Phe Val Val Leu
210          215          220
Val Lys Asp Gln Ser Leu Ala Lys Tyr Gly Lys Ile Ile Gly Gly Leu
225          230          235          240
Ile Thr Ser Asp Gly Tyr His Ile Thr Ala Pro Lys Pro Thr Gly Glu
245          250          255
Gly Ala Ala Gln Ile Ala Lys Gln Leu Val Thr Gln Ala Gly Ile Asp
260          265          270

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Tyr	Ser	Glu	Ile	Asp	Tyr	Ile	Asn	Gly	His	Gly	Thr	Gly	Thr	Gln	Ala		
		275					280					285					
Asn	Asp	Lys	Met	Glu	Lys	Asn	Met	Tyr	Gly	Lys	Phe	Phe	Pro	Thr	Thr		
		290					295				300						
Thr	Leu	Ile	Ser	Ser	Thr	Lys	Gly	Gln	Thr	Gly	His	Thr	Leu	Gly	Ala		
305					310					315					320		
Ala	Gly	Ile	Ile	Glu	Leu	Ile	Asn	Cys	Leu	Ala	Ala	Ile	Glu	Glu	Gln		
				325					330					335			
Thr	Val	Pro	Ala	Thr	Lys	Asn	Glu	Ile	Gly	Ile	Glu	Gly	Phe	Pro	Glu		
			340						345				350				
Asn	Phe	Val	Tyr	His	Gln	Lys	Arg	Glu	Tyr	Pro	Ile	Arg	Asn	Ala	Leu		
		355					360					365					
Asn	Phe	Ser	Phe	Ala	Phe	Gly	Gly	Asn	Asn	Ser	Gly	Val	Leu	Leu	Ser		
		370				375					380						
Ser	Leu	Asp	Ser	Pro	Leu	Glu	Thr	Leu	Pro	Ala	Arg	Glu	Asn	Leu	Lys		
385					390					395					400		
Met	Ala	Ile	Leu	Ser	Ser	Val	Ala	Ser	Ile	Ser	Lys	Asn	Glu	Ser	Leu		
				405					410					415			
Ser	Ile	Thr	Tyr	Glu	Lys	Val	Ala	Ser	Asn	Phe	Asn	Asp	Phe	Glu	Ala		
		420						425					430				
Leu	Arg	Phe	Lys	Gly	Ala	Arg	Pro	Pro	Lys	Thr	Val	Asn	Pro	Ala	Gln		
		435					440					445					
Phe	Arg	Lys	Met	Asp	Asp	Phe	Ser	Lys	Met	Val	Ala	Val	Thr	Thr	Ala		
		450				455					460						
Gln	Ala	Leu	Ile	Glu	Ser	Asn	Ile	Asn	Leu	Lys	Lys	Gln	Asp	Thr	Ser		
465					470					475					480		
Lys	Val	Gly	Ile	Val	Phe	Thr	Thr	Leu	Ser	Gly	Pro	Val	Glu	Val	Val		
				485					490					495			
Glu	Gly	Ile	Glu	Lys	Gln	Ile	Thr	Thr	Glu	Gly	Tyr	Ala	His	Val	Ser		
		500						505					510				
Ala	Ser	Arg	Phe	Pro	Phe	Thr	Val	Met	Asn	Ala	Ala	Ala	Gly	Met	Leu		
		515					520					525					
Ser	Ile	Ile	Phe	Lys	Ile	Thr	Gly	Pro	Leu	Ser	Val	Ile	Ser	Thr	Asn		
		530				535					540						
Ser	Gly	Ala	Leu	Asp	Gly	Ile	Gln	Tyr	Ala	Lys	Glu	Met	Met	Arg	Asn		
545					550					555					560		
Asp	Asn	Leu	Asp	Tyr	Val	Ile	Leu	Val	Ser	Ala	Asn	Gln	Trp	Thr	Asp		
				565					570					575			
Met	Ser	Phe	Met	Trp	Trp	Gln	Gln	Leu	Asn	Tyr	Asp	Ser	Gln	Met	Phe		
			580					585					590				
Val	Gly	Ser	Asp	Tyr	Cys	Ser	Ala	Gln	Val	Leu	Ser	Arg	Gln	Ala	Leu		
		595					600					605					
Asp	Asn	Ser	Pro	Ile	Ile	Leu	Gly	Ser	Lys	Gln	Leu	Lys	Tyr	Ser	His		
		610				615					620						
Lys	Thr	Phe	Thr	Asp	Val	Met	Thr	Ile	Phe	Asp	Ala	Ala	Leu	Gln	Asn		
625					630					635					640		
Leu	Leu	Ser	Asp	Leu	Gly	Leu	Thr	Ile	Lys	Asp	Ile	Lys	Gly	Phe	Val		
				645					650					655			
Trp	Asn	Glu	Arg	Lys	Lys	Ala	Val	Ser	Ser	Asp	Tyr	Asp	Phe	Leu	Ala		
			660					665					670				
Asn	Leu	Ser	Glu	Tyr	Tyr	Asn	Met	Pro	Asn	Leu	Ala	Ser	Gly	Gln	Phe		
		675					680					685					
Gly	Phe	Ser	Ser	Asn	Gly	Ala	Gly	Glu	Glu	Leu	Asp	Tyr	Thr	Val	Asn		
		690				695					700						
Glu	Ser	Ile	Glu	Lys	Gly	Tyr	Tyr	Leu	Val	Leu	Ser	Tyr	Ser	Ile	Phe		

705 710 715 720
 Gly Gly Ile Ser Phe Ala Ile Ile Glu Lys Arg
 725 730

<210> 29
 <211> 900
 <212> DNA
 <213> Streptococcus agalactiae

<400> 29
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 ggttcattct ctacgggagg aagtggatta ccgattcttc aacttttatt gctgcgaggg 120
 agttggaaaa ccaagcttgt ggttttaatc atcttactgc tacttggcgg aggggggacta 180
 accagcattt ttaatgactc atcctcacct tctagttacc aatctcagaa tgtctcacgt 240
 tctgttgata atagcgcaac gagagaacaa atcgatttcg ttaataaagt ccttggtcca 300
 actgaggatt tctggtcaca agaattccaa acccaaggtt ttggaaatta taaggaacca 360
 aaacttggtc tttacaccaa ttcaattcaa acagggttgt gtataggtga atctgcttca 420
 ggaccatttt attgttcagc agataaaaaa atctatcttg atatttcttt ttacaatgaa 480
 ttatcacata aatatggtgc tactggtgat tttgctatgg cctacgtcat cgcccacgaa 540
 gttggtcacc acattcaaac agagttaggc attatggata agtataatag aatgcgacac 600
 ggacttacta agaaagaagc aaatgcttta aatgttcggc tagaacttca agcagattat 660
 tatgcagggg tatgggctca ctacatcagg ggaaaaaatc tcttagaaca aggagacttt 720
 gaagaggcca tgaatgctgc ccacgcgctc ggagacgata cccttcagaa agaaacctac 780
 ggaaaattag tgctgatag ctttaccocat ggaacagctg aacaacgcca acgttgggtt 840
 aacaaaggct ttcaatatgg tgacatccaa cacggtgata ctttctccgt agaacatcta 900

<210> 30
 <211> 300
 <212> PRT
 <213> Streptococcus agalactiae

<400> 30
 Met Lys Ile Asp Asp Leu Arg Lys Ser Asp Asn Val Glu Asp Arg Arg
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 Ser Ser Ser Gly Gly Ser Phe Ser Ser Gly Gly Ser Gly Leu Pro Ile
 20 25 30
 Leu Gln Leu Leu Leu Leu Arg Gly Ser Trp Lys Thr Lys Leu Val Val
 35 40 45
 Leu Ile Ile Leu Leu Leu Leu Gly Gly Gly Gly Leu Thr Ser Ile Phe
 50 55 60
 Asn Asp Ser Ser Ser Pro Ser Ser Tyr Gln Ser Gln Asn Val Ser Arg
 65 70 75 80
 Ser Val Asp Asn Ser Ala Thr Arg Glu Gln Ile Asp Phe Val Asn Lys
 85 90 95
 Val Leu Gly Ser Thr Glu Asp Phe Trp Ser Gln Glu Phe Gln Thr Gln
 100 105 110
 Gly Phe Gly Asn Tyr Lys Glu Pro Lys Leu Val Leu Tyr Thr Asn Ser
 115 120 125
 Ile Gln Thr Gly Cys Gly Ile Gly Glu Ser Ala Ser Gly Pro Phe Tyr
 130 135 140
 Cys Ser Ala Asp Lys Lys Ile Tyr Leu Asp Ile Ser Phe Tyr Asn Glu
 145 150 155 160
 Leu Ser His Lys Tyr Gly Ala Thr Gly Asp Phe Ala Met Ala Tyr Val
 165 170 175
 Ile Ala His Glu Val Gly His His Ile Gln Thr Glu Leu Gly Ile Met

Gln Arg Leu Ser Thr Ala Asn Ala Met Leu Asp Arg Thr Ile Arg Gln
 100 105 110
 Tyr Gln Asn Arg Arg Asp Thr Thr Leu Pro Asp Ala Asn Trp Lys Pro
 115 120 125
 Leu Gly Trp His Gln Val Ala Thr Asn Asp His Tyr Gly His Ala Val
 130 135 140
 Asp Lys Gly His Leu Ile Ala Tyr Ala Leu Ala Gly Asn Phe Lys Gly
 145 150 155 160
 Trp Asp Ala Ser Val Ser Asn Pro Gln Asn Val Val Thr Gln Thr Ala
 165 170 175
 His Ser Asn Gln Ser Asn Gln Lys Ile Asn Arg Gly Gln Asn Tyr Tyr
 180 185 190
 Glu Ser Leu Val Arg Lys Ala Val Asp Gln Asn Lys Arg Val Arg Tyr
 195 200 205
 Arg Val Thr Pro Leu Tyr Arg Asn Asp Thr Asp Leu Val Pro Phe Ala
 210 215 220
 Met His Leu Glu Ala Lys Ser Gln Asp Gly Thr Leu Glu Phe Asn Val
 225 230 235 240
 Ala Ile Pro Asn Thr Gln Ala Ser Tyr Thr Met Asp Tyr Ala Thr Gly
 245 250 255
 Glu Ile Thr Leu Asn
 260

<210> 33
 <211> 1242
 <212> DNA
 <213> Streptococcus agalactiae

<400> 33
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 gtggcactaa ttgtagtaat aggtggcttt ttatgggtac aatctcaacc taataagagt 120
 gcagtaaaaa ctaactacaa agtttttaat gttagagaag gaagtgtttc gtcctcaact 180
 cttttgacag gaaaagctaa ggctaataca gaacagtatg tgtattttga tgctaataaa 240
 ggtaatcgag caactgtcac agttaaagtg ggtgataaaa tcacagctgg tcagcagtta 300
 gttcaatatg atacaacaac tgcacaagca gcctacgaca ctgctaatacg tcaattaaat 360
 aaagtagcgc gtcagattaa taatctaaag acaacaggaa gtcttccagc tatggaatca 420
 agtgatcaat cttcttcac atcacaagga caagggactc aatcgactag tgggtgcgacg 480
 aatcgtctac agcaaaatta tcaaagtcaa gctaattgctt catacaacca acaacttcaa 540
 gatttgaatg atgcttatgc agatgcacag gcagaagtaa ataaagcaca aaaagcattg 600
 aatgatactg ttattacaag tgacgtatca gggacagttg ttgaagttaa tagtgatatt 660
 gatccagctt caaaaactag tcaagtactt gtccatgtag caactgaagg taaactccaa 720
 gtacaaggaa cgatgagtga gtatgatttg gctaattgta aaaaagacca ggctgttaaa 780
 ataaaatcta aggtctatcc tgacaaggaa tgggaaggta aaatttcata tatctcaaat 840
 tatccagaag cagaagcaaa caacaatgac tctaataacg gctctagtgc tgtaaattat 900
 aaatataaag tagatattac tagccctctc gatgcattaa aacaaggttt taccgtatca 960
 gttgaagtag ttaattggaga taagcacctt attgtcccta caagttctgt gataaacaaa 1020
 gataataaac actttgtttg ggtatacaat gattctaata gtaaaatttc caaagttgaa 1080
 gtcaaaattg gtaaagctga tgctaagaca caagaaattt tatcaggttt gaaagcagga 1140
 caaatcgtgg ttactaatcc aagtaaaacc ttcaaggatg ggcaaaaaat tgataatatt 1200
 gaatcaatcg atcttaactc taataagaaa tcagagggtga aa 1242

<210> 34
 <211> 414
 <212> PRT
 <213> Streptococcus agalactiae

<400> 34

Met	Ser	Lys	Arg	Gln	Asn	Leu	Gly	Ile	Ser	Lys	Lys	Gly	Ala	Ile	Ile
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Ser	Gly	Leu	Ser	Val	Ala	Leu	Ile	Val	Val	Ile	Gly	Gly	Phe	Leu	Trp
		20						25					30		
Val	Gln	Ser	Gln	Pro	Asn	Lys	Ser	Ala	Val	Lys	Thr	Asn	Tyr	Lys	Val
	35						40					45			
Phe	Asn	Val	Arg	Glu	Gly	Ser	Val	Ser	Ser	Ser	Thr	Leu	Leu	Thr	Gly
50						55					60				
Lys	Ala	Lys	Ala	Asn	Gln	Glu	Gln	Tyr	Val	Tyr	Phe	Asp	Ala	Asn	Lys
65				70						75				80	
Gly	Asn	Arg	Ala	Thr	Val	Thr	Val	Lys	Val	Gly	Asp	Lys	Ile	Thr	Ala
			85						90					95	
Gly	Gln	Gln	Leu	Val	Gln	Tyr	Asp	Thr	Thr	Thr	Ala	Gln	Ala	Ala	Tyr
			100					105					110		
Asp	Thr	Ala	Asn	Arg	Gln	Leu	Asn	Lys	Val	Ala	Arg	Gln	Ile	Asn	Asn
	115						120					125			
Leu	Lys	Thr	Thr	Gly	Ser	Leu	Pro	Ala	Met	Glu	Ser	Ser	Asp	Gln	Ser
	130					135						140			
Ser	Ser	Ser	Ser	Gln	Gly	Gln	Gly	Thr	Gln	Ser	Thr	Ser	Gly	Ala	Thr
145				150						155				160	
Asn	Arg	Leu	Gln	Gln	Asn	Tyr	Gln	Ser	Gln	Ala	Asn	Ala	Ser	Tyr	Asn
			165						170					175	
Gln	Gln	Leu	Gln	Asp	Leu	Asn	Asp	Ala	Tyr	Ala	Asp	Ala	Gln	Ala	Glu
		180						185					190		
Val	Asn	Lys	Ala	Gln	Lys	Ala	Leu	Asn	Asp	Thr	Val	Ile	Thr	Ser	Asp
	195						200					205			
Val	Ser	Gly	Thr	Val	Val	Glu	Val	Asn	Ser	Asp	Ile	Asp	Pro	Ala	Ser
	210					215					220				
Lys	Thr	Ser	Gln	Val	Leu	Val	His	Val	Ala	Thr	Glu	Gly	Lys	Leu	Gln
225				230						235				240	
Val	Gln	Gly	Thr	Met	Ser	Glu	Tyr	Asp	Leu	Ala	Asn	Val	Lys	Lys	Asp
			245						250					255	
Gln	Ala	Val	Lys	Ile	Lys	Ser	Lys	Val	Tyr	Pro	Asp	Lys	Glu	Trp	Glu
		260						265					270		
Gly	Lys	Ile	Ser	Tyr	Ile	Ser	Asn	Tyr	Pro	Glu	Ala	Glu	Ala	Asn	Asn
	275						280					285			
Asn	Asp	Ser	Asn	Asn	Gly	Ser	Ser	Ala	Val	Asn	Tyr	Lys	Tyr	Lys	Val
	290				295						300				
Asp	Ile	Thr	Ser	Pro	Leu	Asp	Ala	Leu	Lys	Gln	Gly	Phe	Thr	Val	Ser
305				310						315				320	
Val	Glu	Val	Val	Asn	Gly	Asp	Lys	His	Leu	Ile	Val	Pro	Thr	Ser	Ser
			325						330					335	
Val	Ile	Asn	Lys	Asp	Asn	Lys	His	Phe	Val	Trp	Val	Tyr	Asn	Asp	Ser
		340						345					350		
Asn	Arg	Lys	Ile	Ser	Lys	Val	Glu	Val	Lys	Ile	Gly	Lys	Ala	Asp	Ala
	355						360					365			
Lys	Thr	Gln	Glu	Ile	Leu	Ser	Gly	Leu	Lys	Ala	Gly	Gln	Ile	Val	Val
	370					375					380				
Thr	Asn	Pro	Ser	Lys	Thr	Phe	Lys	Asp	Gly	Gln	Lys	Ile	Asp	Asn	Ile
385				390						395				400	
Glu	Ser	Ile	Asp	Leu	Asn	Ser	Asn	Lys	Lys	Ser	Glu	Val	Lys		
			405						410						

<210> 35
 <211> 930
 <212> DNA
 <213> Streptococcus agalactiae

<400> 35
 atgaaaaaaaaa ttggaattat tgtcctcaca ctactgacct tcttttttgggt atcttgcgga 60
 caacaaacta aacaagaaag cactaaaaca actattttcta aaatgcctaa aattgaaggc 120
 ttcacctatt atggaaaaat tctgaaaaat ccgaaaaaag taattaattt tacatattct 180
 tacactgggt atttattaaa actaggtggt aatgtttcaa gttacagttt agacttagaa 240
 aaagatagcc ccgttttttg taaacaactg aaagaagcta aaaaattaac tgctgatgat 300
 acagaagcta ttgccgcaca aaaacctgat ttaatcatgg ttttcgatca agatccaaac 360
 atcaatactc tgaaaaaaat tgcaccaact ttagttatta aatatgggtgc acaaattat 420
 ttagatatga tgccagcctt ggggaaagta ttcggtaaag aaaaagaagc taatcagtgg 480
 gttagccaat ggaaaactaa aactctcgct gtcaaaaaag atttacacca tatcttaaag 540
 cctaactacta cttttactat tatggatttt tatgataaaa atatctattt atatggtaat 600
 aattttggac gcggtggaga actaatctat gattcactag gttatgctgc cccagaaaaa 660
 gtcaaaaaag atgtctttta aaaaggggtgg tttaccgttt cgcaagaagc aatcggtgat 720
 tacgttggag attatgccct tgtaatatata aacaaaacga ctaaaaaagc agcttcatca 780
 cttaaagaaa gtgatgtctg gaagaattta ccagctgtca aaaaagggca catcatagaa 840
 agtaactacg acgtgtttta tttctctgac cctctatctt tagaagctca attaaaatca 900
 tttaaaaagg ctatcaaaga aaatacaaat 930

<210> 36
 <211> 310
 <212> PRT
 <213> Streptococcus agalactiae

<400> 36
 Met Lys Lys Ile Gly Ile Ile Val Leu Thr Leu Leu Thr Phe Phe Leu
 1 5 10 15
 Val Ser Cys Gly Gln Gln Thr Lys Gln Glu Ser Thr Lys Thr Thr Ile
 20 25 30
 Ser Lys Met Pro Lys Ile Glu Gly Phe Thr Tyr Tyr Gly Lys Ile Pro
 35 40 45
 Glu Asn Pro Lys Lys Val Ile Asn Phe Thr Tyr Ser Tyr Thr Gly Tyr
 50 55 60
 Leu Leu Lys Leu Gly Val Asn Val Ser Ser Tyr Ser Leu Asp Leu Glu
 65 70 75 80
 Lys Asp Ser Pro Val Phe Gly Lys Gln Leu Lys Glu Ala Lys Lys Leu
 85 90 95
 Thr Ala Asp Asp Thr Glu Ala Ile Ala Ala Gln Lys Pro Asp Leu Ile
 100 105 110
 Met Val Phe Asp Gln Asp Pro Asn Ile Asn Thr Leu Lys Lys Ile Ala
 115 120 125
 Pro Thr Leu Val Ile Lys Tyr Gly Ala Gln Asn Tyr Leu Asp Met Met
 130 135 140
 Pro Ala Leu Gly Lys Val Phe Gly Lys Glu Lys Glu Ala Asn Gln Trp
 145 150 155 160
 Val Ser Gln Trp Lys Thr Lys Thr Leu Ala Val Lys Lys Asp Leu His
 165 170 175
 His Ile Leu Lys Pro Asn Thr Thr Phe Thr Ile Met Asp Phe Tyr Asp
 180 185 190
 Lys Asn Ile Tyr Leu Tyr Gly Asn Asn Phe Gly Arg Gly Gly Glu Leu
 195 200 205

Ile Tyr Asp Ser Leu Gly Tyr Ala Ala Pro Glu Lys Val Lys Lys Asp
 210 215 220
 Val Phe Lys Lys Gly Trp Phe Thr Val Ser Gln Glu Ala Ile Gly Asp
 225 230 235 240
 Tyr Val Gly Asp Tyr Ala Leu Val Asn Ile Asn Lys Thr Thr Lys Lys
 245 250 255
 Ala Ala Ser Ser Leu Lys Glu Ser Asp Val Trp Lys Asn Leu Pro Ala
 260 265 270
 Val Lys Lys Gly His Ile Ile Glu Ser Asn Tyr Asp Val Phe Tyr Phe
 275 280 285
 Ser Asp Pro Leu Ser Leu Glu Ala Gln Leu Lys Ser Phe Thr Lys Ala
 290 295 300
 Ile Lys Glu Asn Thr Asn
 305 310

<210> 37
 <211> 576
 <212> DNA
 <213> Streptococcus agalactiae

<400> 37
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 tattcatcaa tgcggttatgc tgatacaagt gataagaata ctgacacgag tgtcgtgact 120
 acgaccttat ctgaggagaa aagatcagat gaactagacc agtctagtac tggttcttct 180
 tctgaaaatg aatcgagttc atcaagtga ccagaaacaa atccgtcaac taatccacct 240
 acaacagAAC catcgcaacc ctcacctagt gaagagaaca agcctgatgg tagaacgaag 300
 acagaaattg gcaataataa ggatatttct agtgggaaca aagtattaat ttcagaagat 360
 agtattaaga attttagtaa agcaagtagt gatcaagaag aagtggatcg cgatgaatca 420
 tcatcttcaa aagcaaatga tgggaaaaaa ggccacagta agcctaaaaa ggaacttcct 480
 aaacaggag atagccactc agatactgta atagcatcta cgggagggat tattctgtta 540
 tcattaagtt tttaacaataa gaaaatgaaa ctttat 576

<210> 38
 <211> 192
 <212> PRT
 <213> Streptococcus agalactiae

<400> 38
 Met Lys Val Lys Asn Lys Ile Leu Thr Met Val Ala Leu Thr Val Leu
 1 5 10 15
 Thr Cys Ala Thr Tyr Ser Ser Ile Gly Tyr Ala Asp Thr Ser Asp Lys
 20 25 30
 Asn Thr Asp Thr Ser Val Val Thr Thr Leu Ser Glu Glu Lys Arg
 35 40 45
 Ser Asp Glu Leu Asp Gln Ser Ser Thr Gly Ser Ser Glu Asn Glu
 50 55 60
 Ser Ser Ser Ser Glu Pro Glu Thr Asn Pro Ser Thr Asn Pro Pro
 65 70 75 80
 Thr Thr Glu Pro Ser Gln Pro Ser Pro Ser Glu Glu Asn Lys Pro Asp
 85 90 95
 Gly Arg Thr Lys Thr Glu Ile Gly Asn Asn Lys Asp Ile Ser Ser Gly
 100 105 110
 Thr Lys Val Leu Ile Ser Glu Asp Ser Ile Lys Asn Phe Ser Lys Ala
 115 120 125
 Ser Ser Asp Gln Glu Glu Val Asp Arg Asp Glu Ser Ser Ser Ser Lys

130	135	140
Ala Asn Asp Gly Lys Lys Gly His Ser Lys Pro Lys Lys Glu Leu Pro		
145	150	155
Lys Thr Gly Asp Ser His Ser Asp Thr Val Ile Ala Ser Thr Gly Gly		
	165	170
Ile Ile Leu Leu Ser Leu Ser Phe Tyr Asn Lys Lys Met Lys Leu Tyr		
180	185	190

<210> 39
 <211> 924
 <212> DNA
 <213> Streptococcus agalactiae

<400> 39
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 tgtgcttgta ctaaacaag ccagcaaaaa aatggcttgt cagtagtgac tagcttttat 120
 ccagtatatt ccattacaaa agcagtttct ggtgatttga atgatattaa aatgattcga 180
 tcacagtcag gtattcatgg ttttgaaccc tcatcaagtg atgttgctgc catttatgat 240
 gctgatctat ttctttatca ttgcacaca ctagaagctt gggcgagacg tttggaacct 300
 agtttgcac actctaaagt atctgtaatt gaagcttcaa aaggtatgac tttggataaa 360
 gttcatggct tagaagatgt agaggcagaa aaaggagtag atgagtcaac cttgtatgac 420
 cctcacactt ggaatgaccc tgtaaaagta tctgaggaag cacaactcat cgctacacaa 480
 ttagctaaaa aggatcctaa aaacgctaag gtttatcaaa aaaatgctga tcaatttagt 540
 gacaaggcaa tggctatttc agagaagtat aagccaaaat ttaaagctgc aaagtctaaa 600
 tactttgtga cttcacatac agcattctca tacttagcta agcgatacgg attgactcag 660
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<210> 40
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 <212> PRT
 <213> Streptococcus agalactiae

<220>
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 35 40 45
 Val Ser Gly Asp Leu Asn Asp Ile Lys Met Ile Arg Ser Gln Ser Gly
 50 55 60
 Ile His Gly Phe Glu Pro Ser Ser Ser Asp Val Ala Ala Ile Tyr Asp
 65 70 75 80
 Ala Asp Leu Phe Leu Tyr His Ser His Thr Leu Glu Ala Trp Ala Arg
 85 90 95
 Arg Leu Glu Pro Ser Leu His His Ser Lys Val Ser Val Ile Glu Ala

	100		105		110										
Ser	Lys	Gly	Met	Thr	Leu	Asp	Lys	Val	His	Gly	Leu	Glu	Asp	Val	Glu
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	130						135					140			
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	145				150					155					160
Leu	Ala	Lys	Lys	Asp	Pro	Lys	Asn	Ala	Lys	Val	Tyr	Gln	Lys	Asn	Ala
			165						170					175	
Asp	Gln	Phe	Ser	Asp	Lys	Ala	Met	Ala	Ile	Ala	Glu	Lys	Tyr	Lys	Pro
	180							185					190		
Lys	Phe	Lys	Ala	Ala	Lys	Ser	Lys	Tyr	Phe	Val	Thr	Ser	His	Thr	Ala
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Gly	Val	Ser	Thr	Glu	Gln	Glu	Pro	Ser	Ala	Lys	Lys	Leu	Ala	Glu	Ile
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Gln	Glu	Phe	Val	Lys	Thr	Tyr	Lys	Val	Lys	Thr	Ile	Phe	Val	Glu	Glu
			245					250						255	
Gly	Val	Ser	Pro	Lys	Leu	Ala	Gln	Ala	Val	Ala	Ser	Ala	Thr	Arg	Val
			260					265					270		
Lys	Ile	Ala	Ser	Leu	Ser	Pro	Leu	Xaa	Ala	Val	Pro	Lys	Asn	Asn	Lys
	275					280						285			
Asp	Tyr	Leu	Glu	Asn	Leu	Glu	Thr	Asn	Leu	Lys	Val	Leu	Val	Lys	Ser
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Leu	Asn	Gln													
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<210> 41

<211> 1134

<212> DNA

<213> Streptococcus agalactiae

<400> 41

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 <212> PRT
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<400> 42

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			20					25					30		
Asp	Glu	Glu	Gln	Lys	Arg	Ile	Asn	Glu	Lys	Leu	Arg	Leu	Asp	Lys	
		35				40					45				
Arg	Ser	Lys	Leu	Asn	Ile	Ser	Ser	Pro	Glu	Glu	Pro	Gln	Asn	Thr	Thr
	50					55					60				
Lys	Ile	Lys	Lys	Leu	His	Phe	Pro	Lys	Ile	Ser	Arg	Pro	Lys	Ile	Glu
65					70					75					80
Lys	Lys	Gln	Lys	Lys	Glu	Lys	Ile	Val	Asn	Ser	Leu	Ala	Lys	Thr	Asn
				85					90					95	
Arg	Ile	Arg	Thr	Ala	Pro	Ile	Phe	Val	Val	Ala	Phe	Leu	Val	Ile	Leu
			100					105					110		
Val	Ser	Val	Phe	Leu	Leu	Thr	Pro	Phe	Ser	Lys	Gln	Lys	Thr	Ile	Thr
		115					120					125			
Val	Ser	Gly	Asn	Gln	His	Thr	Pro	Asp	Asp	Ile	Leu	Ile	Glu	Lys	Thr
	130					135					140				
Asn	Ile	Gln	Lys	Asn	Asp	Tyr	Phe	Phe	Ser	Leu	Ile	Phe	Lys	His	Lys
145					150					155					160
Ala	Ile	Glu	Gln	Arg	Leu	Ala	Ala	Glu	Asp	Val	Trp	Val	Lys	Thr	Ala
				165					170					175	
Gln	Met	Thr	Tyr	Gln	Phe	Pro	Asn	Lys	Phe	His	Ile	Gln	Val	Gln	Glu
			180					185					190		
Asn	Lys	Ile	Ile	Ala	Tyr	Ala	His	Thr	Lys	Gln	Gly	Tyr	Gln	Pro	Val
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Leu	Glu	Thr	Gly	Lys	Lys	Ala	Asp	Pro	Val	Asn	Ser	Ser	Glu	Leu	Pro
	210					215					220				
Lys	His	Phe	Leu	Thr	Ile	Asn	Leu	Asp	Lys	Glu	Asp	Ser	Ile	Lys	Leu
225					230					235					240
Leu	Ile	Lys	Asp	Leu	Lys	Ala	Leu	Asp	Pro	Asp	Leu	Ile	Ser	Glu	Ile
				245					250					255	
Gln	Val	Ile	Ser	Leu	Ala	Asp	Ser	Lys	Thr	Thr	Pro	Asp	Leu	Leu	Leu
			260					265					270		
Leu	Asp	Met	His	Asp	Gly	Asn	Ser	Ile	Arg	Ile	Pro	Leu	Ser	Lys	Phe
		275					280					285			
Lys	Glu	Arg	Leu	Pro	Phe	Tyr	Lys	Gln	Ile	Lys	Lys	Asn	Leu	Lys	Glu
	290					295					300				
Pro	Ser	Ile	Val	Asp	Met	Glu	Val	Gly	Val	Tyr	Thr	Thr	Thr	Asn	Thr
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Asp	Lys	Thr	Gln	Thr	Gln	Asn	Gly	Gln	Val	Ala	Glu	Asn	Ser	Gln	Gly
			340					345					350		
Gln	Thr	Asn	Asn	Ser	Asn	Thr	Asn	Gln	Gln	Gly	Gln	Gln	Ile	Ala	Thr
		355					360						365		
Glu	Gln	Ala	Pro	Asn	Pro	Gln	Asn	Val	Asn						
		370					375								